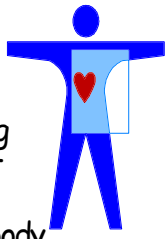
Space Nutrition

Volume 3 | Have test tubes...will travel | Issue #3

Heart Smart



Many changes in the cardiovascular system (heart, arteries, and veins) occur during space flight. The heart does not have to work against gravity to supply blood and oxygen to the body. Not having to work as hard can weaken the heart muscle and can reduce its ability to provide blood and oxygen to the brain when the astronauts return to Earth. This can cause light-headedness and reduce the astronauts' ability to walk or exercise. The Cardiovascular Laboratory at NASA is a team of scientists and engineers who are trying to understand the effects of microgravity on the cardiovascular system, and find ways to improve the astronauts' ability to adapt to these changes both during and after space flight.

Curiosity Corner

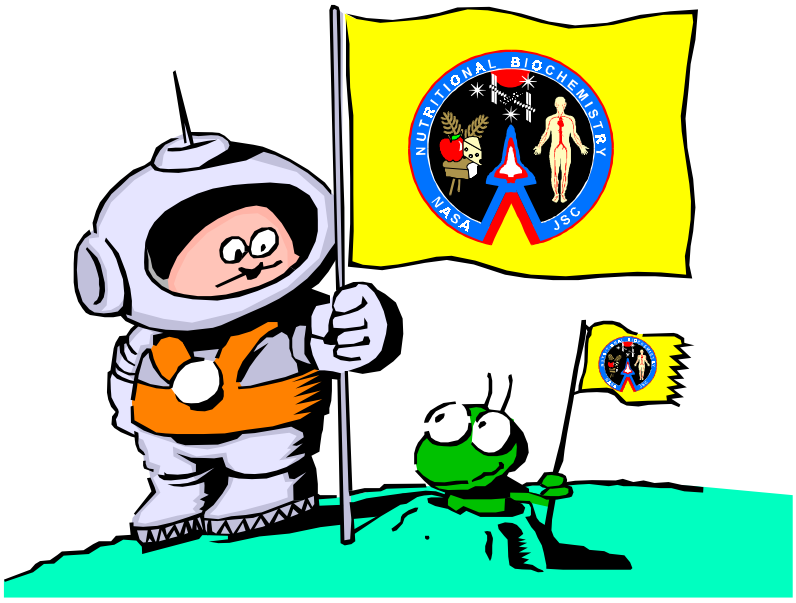
Sam from Texas asks,
"Can the astronauts eat anything they want, or do they have to follow a nutrition plan?"

The astronauts taste-test their foods and select the foods they want to eat before they launch on the Shuttle or to the International Space Station (ISS). Their choices are packed as menus in 10-day cycles (the meals repeat every 10 days). But once they're in space, astronauts are free to exchange foods with their fellow crew members. On the ISS, they sometimes get to eat foods left over from previous crews.

Send your comments or questions to:

Space Nutrition Newsletter
Nutritional Biochemistry Laboratory
Mail Code SK3
NASA - Johnson Space Center
Houston, TX 77058

The Nutritional Biochemistry Laboratory at NASA has all of the tools we need to assess crew members' nutritional status, and to conduct research on nutrition and space flight. But our research projects on the ground often require us to set up laboratories in other places, sometimes pretty far from our homes in Houston. We have laboratory equipment waiting for us in Florida (at the Kennedy Space Center) and in southern California (at the Dryden Flight Research Center) for when the Shuttles return from orbit. The first postflight testing is usually done within hours of landing.



We often have to set up shop in more exotic locations as well. This month, members of our team will travel to Russia to meet the current crew of the International Space Station when they return to Earth. Star City, Russia, is about a 1 hour drive from Moscow. For several years now, we have had the opportunity to work in Star City, starting back when we were flying astronauts to the Russian Mir space station in the mid-1990s. It is usually quite a shock traveling from Texas all the way to Russia - especially in the winter! We don't get a lot of snow in Houston... actually we hardly ever get any!

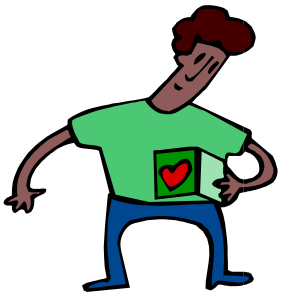
Did you know?

- Another spot where we have set up a remote laboratory is in Key Largo, Florida! This past summer we were there to support the NEEMO 5 mission, where the crew lived under water for 14 days. Our teammates set up a lab on the island to process the blood and urine samples sent to the surface by the crew.

- Other NASA investigators have done research in the Antarctic and in northern Canada - two other remote locations that help us understand the effects of isolation on the human body. You can see that not only have we done research in all corners of the globe - we've also gone from the depths of the sea to orbiting the Earth, to continue to explore our universe!

- The circulatory or cardiovascular system is made up of the heart, blood vessels, and blood. The blood vessels that carry blood away from the heart are called arteries, and those carrying blood to the heart are called veins.

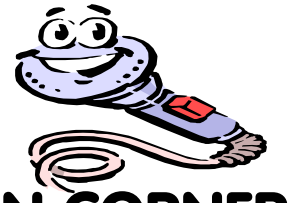
- October 2003 marks the 10-year anniversary of a space shuttle mission dedicated entirely to the life sciences - Spacelab Life Sciences (SLS)-2, which flew on STS-58.



Word of the Month

Neuron

Can you guess what this word means? Look for the meaning of the "Word of the Month" in the next issue of Space Nutrition.



FUN CORNER

Can you find these words?

Underwater	**Russia**	**Arteries**	**Remote**
Laboratory	**Medical**	**Aerobic**	**Pulse**
Antarctic	**Florida**	**Heart**	**Veins**

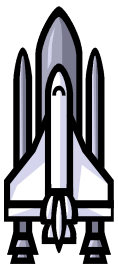
A	D	I	R	O	L	F	I	N	R	D
R	Y	T	E	Q	U	R	S	A	T	S
T	X	R	M	N	O	E	N	P	O	A
E	P	A	O	I	R	T	M	W	C	R
R	D	E	T	T	A	A	B	A	I	M
I	E	H	E	R	A	W	S	T	B	E
E	V	S	C	N	B	R	U	G	O	D
S	E	T	L	O	L	E	O	A	R	I
P	I	Y	A	U	K	D	S	B	E	C
C	N	T	J	E	P	N	E	L	A	A
E	S	A	I	S	S	U	R	S	H	L

Solution to last month's crossword:

I	N	T	E	R	N	A	T	I	O	N	A	L	■	P	R	E
T	■	■	U	■	■	■	R	■	■	E	■	A	■	■	■	S
■	■	■	R	U	S	S	I	A	■	T	■	N	A	S	D	A
■	■	■	O	■	T	■	O	■	■	■	■	G	■	A	■	■
S	T	O	P	■	A	■	■	■	■	S	H	U	T	T	L	E
■	E	■	E	■	R	O	C	K	E	T	■	A	■	E	■	X
■	A	■	A	■	■	■	L	■	■	A	■	G	■	L	I	P
■	C	A	N	A	D	I	A	N	■	T	■	E	■	L	■	E
■	H	■	■	■	E	■	S	■	B	I	O	■	■	I	■	D
■	E	■	■	■	S	■	S	■	■	O	■	■	■	T	L	I
■	R	E	M	O	T	E	■	E	O	N	■	■	■	E	■	T
■	■	G	■	■	I	■	■	V	■	■	I	S	S	■	■	I
E	A	R	■	E	N	G	L	A	N	D	■	■	P	O	L	O
X	■	E	■	■	Y	■	A	■	A	■	E	■	O	■	■	N
I	■	S	■	■	■	■	N	■	S	■	R	■	R	S	A	■
T	■	S	U	N	■	E	D	■	A	D	A	P	T	■	■	■

Check out these cool NASA links for more fun space science facts!

http://www.jsc.nasa.gov/news/factsheets/food.pdf
http://www.nasa.gov/audience/forkids/index.html
http://www.spaceflight.nasa.gov
http://spaceresearch.nasa.gov



Check out the Nutritional Biochemistry Laboratory's website for more information about nutrition and space.

http://haco.jsc.nasa.gov/biomedical/nutrition/